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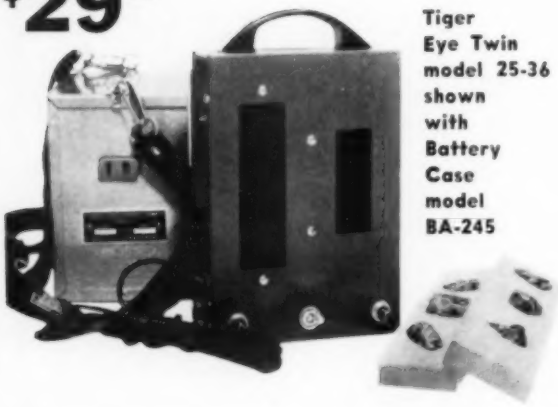

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Official Publication of the Midwest Federation of Mineralogical Societies.

Published Bi-monthly: February, April, June, August, October, December, at Mount Morris, Illinois

Second Class Mail Privileges Authorized at Mt. Morris, Illinois

CONTENTS, APRIL ISSUE, 1960

PUBLISHED BI-MONTHLY by The Earth Science Publishing Company, Incorporated, Advertising and Circulation Offices, Box 1357, Chicago 90, Illinois. *Business Manager,* Dr. J. D. Willems; *Treasurer,* Orval M. Fether; *Advertising Manager,* Earl D. Cornwell; *Subscription Manager,* William H. Allaway. • SUBSCRIPTIONS: $2.00 per year, United States and Canada; elsewhere $2.50. Advertising rates on request. Address Box 1357, Chicago 90, Illinois. • EDITED by Ben Hur Wilson, 406 Grover St., Joliet, Illinois; *Associate Editor,* William H. Allaway; *Club Editor,* Mrs. Bernice Rexin; *Editorial Staff,* Russell P. MacFall, Richard M. Pearl, Frank L. Fleener, Harold L. McCleery, and Donna Fred Hoff. • EARTH SCIENCE is receptive to articles of earth science interest. Manuscripts, photographs, sketches will not be returned unless accompanied by ample first-class postage. Permission to quote or reprint articles from this magazine will be considered upon written request. Communications for editorial consideration should be sent to the *Editor in Chief,* Ben Hur Wilson, 406 Grover St., Joliet, Illinois. The Earth Science Publishing Company makes every effort to select its articles and advertising carefully in order to merit the confidence of our readers, but assumes no responsibility for the statements and opinions expressed by contributors and/or advertisers in the magazine.

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Editor's Memo Pad

SPRING IS HERE! Undoubtedly this is the most glorious time of the year. All Nature seems to be bursting forth with new freshness and beauty. Flowers are blooming, birds will be singing, and the hum of the season seems to be contagious, for our minds likewise are already teeming with ideas and plans for getting into the great out-of-doors where we may come in closer contact with Nature's world—and of course this means field trips for geologizing and the collecting of rocks, minerals and fossils to our hearts' content.

What a pleasant relief this will be from the long winter months, when most of us have been closely confined to our basement, or perhaps some other dog-house, where we have about worked up most of the good materials that we had collected during the preceding season.

Where will we go first—that is the big question? Some perhaps will be planning a trip to "far-away-places," for instinctively, like Old Bossie, the collecting grass seems to be just a little bit greener on the other side of the fence. Of course, when this is possible, it is a mighty nice thing to do, as most of us do have our favorite collecting areas, where collecting is better, or perhaps where we only can find the particular material in which we are most interested.

For others this, for many good and sufficient reasons, may not be practicable, and herein lies a story which has a good moral for Rockhounds—also applicable to many other circumstances of life. We like it so well that we cannot resist relating it here.

"*Acres of Diamonds*," and not Arkansas diamonds either. Early in the present century Russell Conwell (1843-1925), President of Temple University, Philadelphia, delivered what was perhaps the most memorable series of lectures ever given on the lyceum stage of America. No one who ever heard him will ever forget "Acres of Diamonds" which was a résumé of a book on the same subject written by him in 1888. It was presented some ten or twelve thousand times, which was a record never equaled in this or any other country.

As the story goes, Conwell's fictitious friend was obsessed with the idea of prospecting for gold. Almost daily for many years he would take his pack and rush out through the big stone gate at the rear of his home, and on into the hills as far as he could walk, in search of the illusive precious gold ore for which he was looking.

This he did year after year, and as time moved forward he finally became too old to travel any great distance away from his home. He would often go, however, on bright warm days, as far as the garden gate, and look longingly out into the hill country through which he had trudged for so many miles, in better days, in search of the coveted gold.

One day, when more tired than usual, he leaned up against the great stone pillar of the gate to rest himself, and upon coming closer to the wall he noticed something yellow shining brightly in the warm noon-day sun, which upon closer examination turned out to be the gold ore for which he had so long been searching. Since the stones in the wall had come from nearby, it was evident that by his failing to look close at hand, he had missed the opportunity of his lifetime.

But why further belabor the point, as the moral must be plain to all of us. If you cannot travel halfway across the state or continent in search of your coveted specimens, go out into your own back yard or back country and enjoy yourself. You may be surprised at what you may see and what you may find. Some will say there is no place to go, but this is not right. Visit every rock exposure, every quarry, gravel bed, stone pile, and do not overlook the stream, creek and river beds, and especially the dry-runs. You may be rewarded beyond your fondest expectations.

Don't feel sorry for yourself because you cannot take a long collecting trip, and remember that when you do, someone else from far distant places may be coming to your own back door to collect what you yourself may have overlooked. Acres of Diamonds does indeed have a moral.

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Items of Interest!!

THE only known prehistoric mine in the Southwest is said to be the "Great Turquoise" located on Mount Chalchihuitl near the town of Los Cerillos, New Mexico. It was here where the ancient Indians secured their "sacred sky stone", turquoise to moderns.

* * * *

What is bdellium? Does anybody have the answer? In the Scriptures we read:

Genesis: 1:12—And the gold of that land is good: there is bdellium and the onyx stone.

Numbers: 11:7—And the manna was coriander seed, and the color thereof as the color of bdellium.

* * * *

It is hard to believe that Antarctica was once a temperate Continent. That this is true is indicated by the fact that petrified forests have been found some 300 miles (north) from the South Pole. This might be explained by one or more of several causes. Perhaps the Earth itself was once much warmer than now, or did our Sun radiate more energy in earlier geological times? Or was the Earth's axis tilted differently from at present, or has there been a shifting of the poles? Take your choice—it costs nothing to speculate upon such theories.

Dates for Your Calendar

COMING UP: Some good shows and exhibits in April, which many may wish to take advantage of.

April 22-24 and April 29-May 1. MESABI ROCK & MINERAL CLUB, First Annual Show. April 22-24 with the Hibbing Sportsman's Show in the Memorial Building, Hibbing, Minnesota. April 29-May 1 with the Eveleth Sportsman's Show in the Hippodrome, Eveleth, Minn. For information write: Richard N. Lake, P.O. Box 361, Chisholm, Minnesota.

The MINNESOTA MINERAL CLUB will hold its 15th annual non-commercial Gem and Mineral Show, Sunday April 10th at the Garden Country Club, Southdale, Minneapolis. In addition to gem displays, there will be demonstration booths for the lapidary arts. Admission Free. Carroll Kelley, Chairman.

THE CENTRAL NEBRASKA ROCK AND MINERAL SOCIETY will have their sixth annual Rock and Mineral Show at the National Guard Armory, 2015 West 3rd Street, Hastings, Nebraska on April 8, 9 and 10, 1960 from 9 a.m. to 9 p.m.

This show is conducted by an active club widely diversified in the rock hound arts showing outstanding collections of mineral crystal specimens, rough and finished gem materials, artifacts and an outstanding collection of opal. Visiting exhibitors will participate. Dealers are selected on the basis of quality and fair dealing. Rough and finished gem material, specimens, findings, equipment and high quality opal will be offered.

Correspondence will be handled through Mrs. Pat Hill, 1230 North California Street, Hastings, Nebraska.

NEW JERSEY MINERAL & GEM CLUB invites you to join us and arrange your week end to attend this show, May 7-8, 1960, at the IRVINGTON HOUSE, 925 Springfield Ave., Irvington, N.J., Sat. 10 AM-10 PM. Sun. 1 PM-8 PM.

WYOMING MINERAL AND GEM SOCIETY, Annual Convention and Show. Rex Young Society of Rockhounds, Host. Goshen County Fairgrounds, Torrington, Wyoming. July 2-3-4. Exhibit and dealer space available. Contact: Charles Bass, Jay Emm, Wyoming.

OUR AUTHORS

While our author, Russell Kemp, does not claim to be a lapidary artist, he does, however, have a fine appreciation of the artistic side of the hobby. Being a connoisseur of fine Chinese Steatite carved pieces, of which he owns a number of very excellent specimens, he is able to write with authority upon this subject, and his article is both interesting and informative. He is the president of the Chicago Lapidary Society, one of the most active in the country, and also prominent in Midwest affairs, as well as the National Association of Bulletin Editors, of which he is the vice-president.

* * * *

Author Harry H. Sprague is vice-president of the Midwest Federation and resides in Saginaw, Michigan, where he is a very active member of the Tri-County Rocks and Minerals Society, and incidentally a fine booster for EARTH SCIENCE magazine.

* * * *

OUR AUTHORS: Dr. Clarence R. Smith is Professor of Fundamental Sciences at Aurora College. He is a scholar of note, and is very generous of his talents, speaking with interest before many of the Earth Science Clubs of the Chicago area, having done much work with fossil vertebrates, and in preserving their remains in the Aurora College Museum.

Midwest Club News

Mrs. Bernice Rexin, Club Editor
3934 N. Sherman Blvd.
Milwaukee 16, Wis.

ISHPEMING ROCK AND MINERAL CLUB visited the old mine dumps in the Copper Country in upper Michigan, during late October, and found an abundance of datolite, thompsonite and copper. This is just one of the areas that will be included in the more than 20 separate field trips planned by the club for the Midwest Federation's 1960 Field Trip Convention which the club will be host to on July 1 to 4.

MICHIGAN GEM AND MINERAL SOCIETY recently enjoyed an interesting talk on "The Upper Peninsula of Michigan," by Floyd Mortenson, Regional Vice-President of the Eastern Region of the Midwest Federation. Many slides of Upper Michigan were shown and the location of many different minerals was given.

The society will be host to a Midwest Federation Rockrama in Jackson, Michigan on May 14 and 15.

KALAMAZOO GEOLOGICAL AND MINERAL SOCIETY awards a door prize at each meeting by drawing membership card numbers. Each member has a permanent number which is written on his or her membership card. December's prize, a year's subscription to *Earth Science*, was won by Harlan Waters.

TRI-STATE GEM AND MINERAL SOCIETY (Dubuque, Iowa) reports that the highlight of its fall programs was "Black Light". A talk and colorful exhibition of fluorescent materials were given by Mr. Valentine. The society's bulletin, "The Pseudomorph" carried a brief explanation of the phenomenon of fluorescence and a colored diagram of the electromagnetic spectrum, including the ultraviolet area popularly know as "black light."

DES PLAINES VALLEY GEOLOGICAL SOCIETY recently heard Paul Duncan speak on "The Red Desert Area of Wyoming." His talk was well illustrated with slides and motion pictures of the desert, and he exhibited Indian boiling stones, fossil fish, turritella agate and petrified wood that he had collected during his travels in this area.

CINCINNATI MINERAL SOCIETY recently enjoyed a demonstration and lecture on "The Lapidary Arts," by Dr. V. G. Hansley and John Pagnucco.

MARQUETTE GEOLOGY ASSOCIATION'S bulletin, MGA, is edited by its junior members. Chief editor is Donald Heyda, 3034 Maple Ave., Berwyn, Illinois.

ST. LOUIS GEM AND MINERAL SOCIETY recently heard Lyman Riley, who is a geology instructor at Trinity College (Sioux City, Ia.), president of Cave Men of America, and owner of Onondaga Cave, give an educational talk on the outstanding caves in the United States. Mr. Riley's talk sparkled with his Irish wit.

ELKHART MINERAL SOCIETY rotates mineral, fossil and lapidary programs at its monthly meetings. Its January meeting featured a mineral program. A 45-minute, color and sound film on "Mining of Nickel" was shown and each member was given an eighty-page booklet entitled "The Romance of Nickel." Following the film, a question and answer forum on nickel was conducted by W. J. Glover, Geologist, who was formerly associated with the International Nickel Company.

MINNESOTA MINERAL CLUB on January 8 heard Zoltai, of the Geology and Mineralogy Department of the University of Minnesota, lecture on "Natural and Artificial Diamonds." Dr. Zoltai summarized the physical and chemical properties of the diamond to show why it is so highly valued in both gemology and industry. He also discussed the chemical and physical conditions under which a diamond can crystallize and explained the procedures used by the General Electric Laboratories in synthesizing diamonds.

CHICAGO ROCKS AND MINERAL SOCIETY on Jan. 9 heard Dr. W. E. Powers of Northwestern University discuss "The History of Lake Michigan." Dr. Power's lecture was illustrated with slides and dealt with the relationship of the lake to the various glaciers that once covered it.

NEBRASKA MINERAL AND GEM CLUB is considering purchasing books of interest to rockhounds and donating the books to the Omaha Public Library. Topping the list of books, that the club proposes to purchase for the library, are expensive reference books that the average rockhound cannot afford to buy.

WICHITA GEM AND MINERAL SOCIETY'S annual show will be held April 23-24 at the East National Guard Armory, 620 North Edgemoor, Wichita, Kansas. In addition to the many cases of minerals, fossils, artifacts and jewelry, there will be working displays, special exhibits and interesting talks.

(*Continued on p. 67*)

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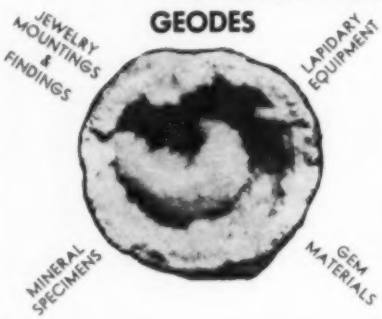

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APRIL, 1960 Formerly Earth Science Digest Vol. 13, No. 2

A Little On Soapstone Carving

by RUSSELL KEMP

IT HAS been said that "ART is craftsmanship plus inspiration." This is especially true of the lapidary arts of which carving is highly regarded. Carving is a subtractive technique in that the final form is a reduction of an original mass. It has also been written that "design and workmanship are indivisible." The piece made may reveal more of one than the other, the ideal is reached when there is a balance of both. When we say that design is original, we mean that more than usual of the worker's life has escaped into the work. Originality is no rarity, everyone is original. Everyone can design, if not supremely, at least beautifully. There are no unskilled workers; only spirits half awake.

As pointed out in an article by Frank Moran, The Materials of Chinese Jade (Dec. '59, EARTH SCIENCE), the Chinese carved in many stones other than jade. Over a period of many years some of these materials have been mistaken for jade and most, although not carved of the precious jade, are very beautifully done and of interest to collectors. Jade carvings and stone carvings other than jade were seldom inscribed by the carver so it has been difficult to fix the exact period in which they may have been worked. Many pieces can be dated, as they have been excavated from tombs or found in diggings that are known to have evolved during a certain dynasty. Students of Oriental Art have placed the probable beginning of carved ornamental stone as some where between 2500-2200 B. C. None of the carvings used as illustrations here are old by these standards, but a couple could be several hundred years old.

The question of what types of materials were used can be answered very easily by anyone familiar with scratch tests, specific

Old carving of steatite. Color white, mottled with dark reddish brown and black, on oval white jade plaque.

Greyish brown mottled steatite vase, setting on ornately carved ebony dais.

gravity and physical properties of carving material. A stone commonly used was SOAPSTONE or STEATITE. This is a material having a hardness of only about 1, and a specific gravity of 2.6 - 2.8. Its extreme softness and greasy feel are characteristic. The lustre on the cleavage face is pearly or sometimes silvery. The color can be white, grey, yellow, reddish brown, dark brown, black, gray-green, yellow-green and frequently a mottled combination of several colors. In most cases these carvings may have been done by craftsmen working with metal tools or in ancient times by tools made from stones harder than soapstone, such as agate or jadeite.

Soapstone or steatite has always been a favorite of carvers. It was used by the early Egyptians for scarabs and other amulets, which were sometimes coated with a blue vitreous glaze. It was employed for Assyrian cylinder-seals and for signets and ancient steatite carvings as found among the ruins of Rhodesia.

The Chinese carvers largely used steatite for their ornamental carvings, but many of their figures are wrought in a compact pyrophyllite, which is essentially different from steatite, slightly harder but with the same greasy feel.

It is interesting to note that the only difference between methods used in ancient days and the lapidary of today, is the addition of electrical power. No new tools have been invented; only improvements of the old have been developed. The ancient Chinese and Egyptian lapidary working with both soft and hard stone had available and recognized different abrasives by their hardness.

He made his own abrasive pastes by mixing water with "yellow sand" from quartz, "red sand" from garnets, "black sand" from natural corundum. It has also been established that the Chinese also used a "jewel dust" of ruby crystals brought in from Yunnan and Tibet. This was used probably on a leather wheel to give their final polish on jade. During the fifth or sixth century B. C., the iron wheel was introduced, rotated by treadle type power operated by the feet.

Drilling and piercing was done by the tube method, where they used a bow-string type drill, operating in abrasive in a bamboo or iron tube. Sawing must have been tedious, one early method, a four handed toothless iron saw worked by two men; another a circular saw fitted to be mounted on a wooden axle of a treadle and put by it into vertical revolution. Many hobbyists today enjoy the art of carving and most use the electrical flexible shaft machines with grinding and polishing attachments. This is a vast improvement over the methods described in Chinese Art by S. W. Bushell or Chinese Jade Carving by S. H. Hansford.

The carvings pictured with this article are mostly of decorative vases but more common are figures representing gods, idols, animals both mythical and real, and pieces carved for personal adornment.

To view and enjoy carved pieces of Chinese Art, it is only necessary that you visit your closest museum or art center. There are many fine collections in this country. We can highly recommend the exhibits at the Chicago Natural History Museum, The Nelson-Atkins Gallery and Museum in Kansas City, Metropolitan Museum of Art, New York City, and the Freer Gallery in Washington, D.C. We know there are also fine exhibits in Bos-

Very good reddish brown steatite carving, on setting of hand made brass box with jade inset top.

ton, Toronto, Canada, San Francisco, Minneapolis, Milwaukee, and many other places in this country and we hope someday many of us may have the opportunity of visiting some of them and thereby becoming better acquainted with this phase of the Lapidary Art.

What Is Steatite?

TALC, "soapstone" and steatite are closely associated, and it is indeed sometimes hard to point out exactly where one begins and the other leaves off. They all have properties and constituents in common and blend almost imperceptibly from one into the other. As is often the case in such instances, one person may use one name for the specimen and an equally good authority may use another. At any rate we all know what is meant when the term is used interchangeably, and what or what not may be correct, for the purpose of this discussion is of small consequence.

To begin with a glance at the material's origin and properties will be very helpful. In composition it is an acid magnesium metasilicate, bearing the chemical formula $H_2Mg_3(SiO_3)_4$;—it is very soft, and has an S.G. (specific gravity) of about that of quartz, i.e.—2.6 to 2.9, depending upon the various impurities which may be present.

As the mineral TALC, it usually occurs foliated (layers or sheets), also as fibrous or granular masses of usually whitish, grayish or sometimes greenish color. It has a wide variety of uses, as cosmetics (talcum powder), "French chalk", used for centuries by tailors and other artisans, and for making soap, paper, lubricant, insert pigments, etc.

Symbolic animals decorate enlarged closed lotus leaf, carved of reddish brown steatite. Modern but excellent.

Steatite (soapstone) is essentially talc which is associated more or less with impurities such as mica, tremolite, enstatite, quartz, and magnesite—all constituents of its hydrated metamorphic predecessor. It more often tends towards the brownish color, and is often mottled. It was probably first a tremolite or enstatite schist, in which the metamorphic rock came into the zone where hot groundwaters existed, altering the talc, the impurities remaining about as they were in the first place.

It has been used by man since prehistoric times, both for utilitarian and for artistic purposes — (see article). Our early Indians took advantage of the ease with which it could be worked, to carve from it large pots for heating and holding liquids,—also for making pipe-bowls, amulets and ornaments which are valued treasures today — much sought after by collectors of Indian artifacts. Oriental peoples have used it for many centuries for carving fine works of art.

Modern man has also used it for foot and bed-warmers, for which its ability to hold heat well makes it an excellent material;—also for table tops, hearths, lintels, coarse utensils, the lining of sinks, etc. It also has many industrial uses, such as for electrical apparatus, for back-boards in high voltage switch boxes, and many other purposes too numerous to mention.

Steatite can best be identified by its smooth soapy feel, its extreme softness, (can be scratched with the finger nail), its typical colors and its medium weight. Its occurrence is widespread, being found in nearly all the Appalachian states from Vermont to Georgia—in Wisconsin, California and elsewhere throughout the world wherever metamorphic rocks predominate.

B H.W.

Imagination Plus Effort Equals Artistry in Stone

by HARRY H. SPRAGUE

"TEA TIME."— This intarsia is a splendid example of the lapidary art, "Art Lapidary" at its best, and is the work of craftsman Paul Zammit of Detroit.

TO the cabochon cutter, at some stage in his development, there comes a time when he will pause and look about for a better way to express his skill and imagination.

Practice makes perfect and when perfection has been achieved, the thrill of striving for it is gone. Something else must take its place. True he can turn to faceting, and for a time be satisfied, but eventually he will again find that perfection of its mechanical principles has once again robbed him of the enjoyment of doing.

Such was the case when Paul Zammit stopped one evening at the home of John Mihelcic in Detroit. He seemed restless, and to ease his tension John invited Paul to join him in the basement where he was cutting some gem rough. It was there that Mihelcic gave Paul a Tahitian Shell that he had received from craftsman Joe Phetteplace and told him of the work that was being done by an advanced Lapidary artist in carving these shells.

From this beginning the artistic and imaginative genius of Paul Zammit has grown and blossomed out, producing some of the most beautiful carvings, cameos, and intarsias produced by any amateur lapidary in America. Beginning with a few crude tools on hand, he now has a vast collection of special equipment, most of which is of his own design and built by himself. Paul Zammit has progressed from that first piece of shell on toward that unlimited horizon that is limited only by his own ability and imagination.

The Intarsia, "TEA TIME", is a splendid example of the Lapidary Art. Mr. Zammit was persuaded to exhibit this work in the Saginaw Fair Gem and Mineral Show last September. In his own words he stated to the author that "I had a fear in my heart that it was not good enough to enter in a lapidary competition." Paul Zammit was wrong. The Intarsia was the hit attraction of the Show and it won the Trophy for the Best Individual Exhibit.

"TEA TIME" has 189 separate cut and polished pieces fitted so closely together that it is hard to distinguish where one pièce starts and the next ends. The materials used in this 18" by 13" intarsia are as follows: Walls—Pale Green Jade; Window Panes—Montana Agate; Window Frame—Golden Tiger Eye; Window Strips—Black Jade; Picture on Wall—Montana Agate; Stool—Cherry Tiger Eye; Vase and Pedestal—Golden Tiger Eye; Tea Set—Agate; Table Top—Agate; Table Legs—Golden Tiger Eye; Woman's Hair—Black Jade; Face and Hands—Datolite; Kimono—Rhodochrosite; Dress — Shattuckite; Floor Tiles (light) Common Opal; (dark) Black Jade.

When questioned as to the length of time it took to do this work Mr. Zammit shrugged his shoulders and exclaimed, "Time—I have no idea, I never consider time when I am doing something. I made Tea Time because I felt I had to." And like all creative artists Paul Zammit is not even sure exactly when he made the Intarsia. Just that it was quite some time ago, he finished it and set it aside as he went on to other projects.

A professional Photographer and Re-Touch artist by trade, he was born in Austria, educated in Europe, and is now a citizen of the United States. He lives and works in Detroit, Michigan, and is an active member of the Michigan Mineralogical Society. Mr. Zammit has given the author permission to announce that he has consented to place on display his collection of Art Work in the Special LAPIDARY DIVISION of the 1961 MIDWEST FEDERATION GEM AND MINERAL FAIR AND CONVENTION to be held at Saginaw Michigan.

* * * *

And thus I saw the horses in the vision, and them that sat on them, having breastplates of fire, and of JACINTH, and brimstone. *Revelation 9:17*

* * * *

Poor Philosophy! !

WE heard said,—"One bad thing about joining a club, you have to attend every meeting to keep from being put on a committee." And then the matter of dues,—

Some folks pay their dues,
When due,
others When over due
and some Never do,
How-do-you-do? Yes YOU!

Attitude is a state of mind—some folks say when they are asked, what is it?

"I don't know, and I don't care—what does it matter."

Others say:

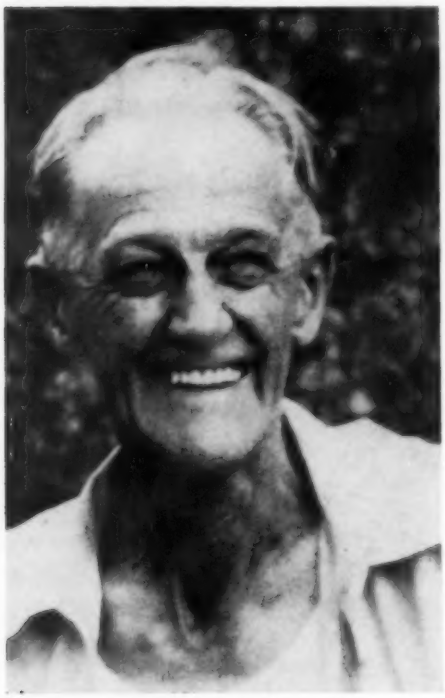
"I don't know, but I'm going to find out! !"

What do you say?

A motion was made from the "floor" which I could not hear, so I asked my fellow member sitting beside me—What was the motion just made?—and he replied: "I don't know, but I'm agin it! !"

Nuff said.

"IN MEMORIAM"



The late Victor Shaw, showing characteristic jovial mood.

SAD news comes from California, telling us of the death of Alfred Victor Shaw, at Bakersfield, on November 20th, 1959. "Vic", as he was always affectionately known to his thousands of friends throughout the land, was the author of scores of articles, and of the famous "Lost Mine" series which have from time to time appeared in EARTH SCIENCE.

He was born in Cambridge, Mass., December 12th, 1872. He graduated from Massachusetts Institute of Technology in 1896 as an architect. Since his bent was toward Geology and Mineralogy, and imbued with a deep need for adventure, he turned away from his profession and became an explorer, mining superintendent, and writer.

He was privileged to make two trips to Greenland with the Peary Party in 1897 and 1899. During his first trip he mapped the then uncharted coast of Frobisher Bay for which in 1928, he was elected Fellow of the National Geographic Society.

He was charter member of the Explorer's Club of NYC, the MIT Club of Southern California, and of the Treasure Trove Club, which recently elected him Mr. Treasure Hunter of 1959.

He went to Alaska during the Klondike Rush in 1898. Later he worked his father's mine in Silverton, Colorado, from 1901 to 1914. From 1924 to 1936 he lived in Ketchikan and Loring, Alaska, prospecting and writing.

His last exploration was made in November, 1946 when accompanied by a friend, he made a trip to the Superstition Mountains of Arizona in search of the Lost Dutchman Mine which, incidentally, they never found.

He lived in the Lake Hughes area of Southern California from about 1942 to 1957 when he moved to Frazier Park. His illness required that he be moved to

Bakersfield this past summer to live in a Home for the Aged where he passed away in November.

His funeral was held in Santa Monica, Nov. 24, and his ashes were placed in his wife's grave in Valhalla Cemetery in Burbank.

He lived his life as he wanted to, to the hilt, following the Call of the Red Gods, as in Kipling's "The Feet of Young Men," which poem was his inspiration.

"He must go-go-go away from here,
On the other side the world he's overdue,
'Send the road is clear before you,
When the old Spring-fret comes o'er you,
And the Red Gods call for you."

His memory will endure as long as the romantic literature the "The Mine" and mining history is read.

Ed. Note: The above was prepared from notes by Miss Katharine Shaw, his niece, who resides at 11767 Gateway Blvd., Los Angeles 64, California.

"IN MEMORIAM"

We have lost a Friend

WE regret to report the passing of John C. Bohmker, inventor and industrialist, of Kankakee, Illinois, on September 12, 1959. He was an earth scientist of more than ordinary enthusiasm and talent, an honorary life subscriber of EARTH SCIENCE magazine, and an avid collector of fine mineral and archeological specimens.

Born in Wendorf, Germany in 1882, he came to America as a young lad with his parents, and by dint of hard labor and intelligent planning, he became a noted industrial engineer, with many important inventions to his credit, largely in the field of agricultural implements and machinery.

Following his retirement from active duties in 1942, his great interest in science led him to study archeology, geology and mineralogy, and in turn, these studies led him to world-wide travel. Mr. Bohmker visited the 'gold coast' and diamond mines of South Africa, the pyramids of Egypt, and became as familiar with Europe as he was with the United States.

He also visited historic Idar-Oberstein, becoming well acquainted with many of the descendants of the early ancient craftsmen while there. His avocation resulted in a large well organized and beautifully displayed collection of minerals and Indian artifacts, and more recently in his pursuit of the art of polishing semi-precious gem stones. Always interested in good public relations, he was a member of many scientific and civic clubs and other organizations, where his presence will be greatly missed.

Rockhounds, Are You Feeling Cold Today?

HOW cold is a "chilling wind"? The Army decided to find out—and found it's plenty cold. Here, to guide your own plans for outdoor living (and outdoor products) is a portion of the "Wind Chill Chart" developed by Army medical researchers. To use it, find the expected wind velocity, and move down that column until the temperature closest to the expected figure is reached. From that point, move horizontally all the way to the right—to the point where your horizontal intersects the "0" wind-velocity column. That gives the equivalent or effective temperature. For example, suppose the wind velocity is 20 mph, and the expected temperature is 35 F. Going down the "20" column, 34 is the closest temperature figure. Following its horizontal to the right, gives an equivalent reading of —38 F. Without protection then, you'll feel 73 degrees worse than the thermometer said.

Temperature, °F	Wind Velocity (miles per hour)					
	25	20	15	10	5	0
	80.5	80	79.5	78	76	60
	69.5	68	67	65	60	23
	59	57	55	52	44.5	—11
	47	45	42.5	38	28	—27
	36	34	30.5	25	11	—38
	25	23	18	11	—5	—40

An Open Letter on Our 1960 Midwest Field Trip Convention

by BERNARD E. DOOLEY, *General Chairman*

IN extending an invitation to the Midwest Federation to hold the 1960 Field Trip Conclave at Ishpeming, we knew that we were taking on a big job. This, not because it's so hard to please the Midwest rockhounds, but because we wanted to make this a convention which would never be forgotten by those attending. We think we will accomplish this.

A convention of this type requires so many details to be taken care of that it would be impossible for one or two persons to do it all. We have been very fortunate in securing the very able services of a great many of our members as committee chairmen, and they in turn have enlisted the aid of practically all of our members as committee workers. With such cooperation the success of the 1960 Field Trip Convention is assured.

Inasmuch as mineral collecting in the entire western half of the Upper Peninsula is so good, we felt that it would not be fair to confine our field trips to the Ishpeming area only. This area being relatively small would be overcrowded and the collecting correspondingly difficult. With this thought in mind, we have decided to include the world-famous "Copper Country", the Felch-Randville District in Dickinson Co., the Iron River area in Iron County and the Ironwood area in Gogebic County.

Mr. Kiril Spiroff of the Geology Department of Houghton College of Mining and Technology has graciously offered to conduct the collecting tours in the Copper Country. We are extremely fortunate in having Mr. Spiroff for this as without a doubt he knows more about the min-

1960 Convention Chairman Bernard E. Dooley points to some of the fine rare specimens Midwest Rockhounds may collect when they attend the Ishpeming Field Trip Convention next July 1st to 4th.

START PLANNING NOW TO ATTEND THIS BIG EVENT

erals of the Copper Country and where they are to be found than anyone else.

The field trips to the Ironwood area will be conducted by the Range Minerals Club of Ironwood, a recent newcomer to the Midwest Federation. The collecting in this area will be for some of the finest iron minerals and the Range Minerals Club knows where to find them.

Mr. Jarl Kivela, who will be in charge of all the local collecting trips, will also be in charge of the Dickinson County and Iron County field trips. Mr. Kivela is an avid collector and knows these areas well.

A number of the mining companies of the area have volunteered to allow a limited number of underground tours of their mines and this is an opportunity which everyone eligible should avail himself of. These will not be collecting trips but should not be overlooked because of this. Ordinarily, visitors are never allowed underground, so be sure to sign up when you arrive. These tours will be limited to men in generally good health and over 21 years of age. Surface tours will be conducted for the ladies. If you have always wondered what it is like to be thousands of feet underground, don't miss this!

A brief summary of some of the other highlights of the convention are as follows:

Thursday, June 30—Registration begins.

Friday, July 1—Registration; underground tours and local field trips.

Saturday, July 2—Local field trips and bus trips to the outlying areas. In the evening there will be an outdoor barbecue and singing around a bonfire. A barbershop quartet will be on hand to entertain us with some of the old songs and to lead us in community singing.

Sunday, July 3—Local field trips and bus trips to the outlying areas. In the evening there will be the traditional Boulder Busters' Banquet. To assure the success of this banquet, we have engaged the services of the finest caterer in the North. The juniors will have their own banquet this year with their own M. C. and entertainment. This will be simultaneous with the regular banquet and should prove a great success.

Waterfalls, Marquette County, Michigan. Beautiful scenery abounds everywhere nearby.

Monday, July 4—Local field trips during the day and a smorgasbord dinner in the evening. This, too, will be catered and promises to be something long remembered.

A post-convention highlight will be instruction in silver-working by Mr. Tolson Radloff on Tuesday, July 5. Mr. Radloff is well known in this field and we certainly appreciate this kind offer of his.

Due to the limited number of eating places which this area has and the congestion they will encounter due to the Fourth of July weekend, plus the Midwest Convention, it is suggested that you avail yourselves of the banquet, barbecue and smorgasbord. I'm sure you will never regret it.

So pack up your rock-busting tools, load the car with swapping material and head for Ishpeming, Michigan, and the 1960 Midwest Field Trip Convention. We promise you a wonderful time!

Sincerely,

Bernard E. Dooley, General Chairman
Box 507 Stambaugh, Mich.

Rare Gems of the Midwest

by JUNE CULP ZEITNER

SOME OF the rarest gems in all America are found in the Midwest. Not blest with vast amounts of gem materials like the far West, at least the Midwest does not suffer from any lack of quality or variety. Many American gems belong to the quartz family, however the Midwest has gems not only of this group but also the calcite group, the lignite group, and the zeolites.

Thomsonite:

Three of the Midwest's rare beauties belong to the zeolites. The first of these, thomsonite, is found principally on the north shore of Lake Superior. Grand Marais is the best known locality but thomsonites are also found on Isle Royale and the Keweenaw peninsula of Michigan. These small, usually rounded gems occur in a basalt matrix. In some cases they are as close together as peanuts in candy. The attractive eye and band patterns are in tints of red and green on a white background. Having a hardness of 5 and a fibrous radiating structure, thomsonites take a satiny polish and are well suited to the lapidary arts.

Chlorastrolite:

Isle Royale is so much the home of the gem Chlorastrolites that they are commonly known as Isle Royale greenstones. Chlorastrolite is derived from Greek words meaning green star. The intricate pattern resembling a miniature turtle back is a lovely green with white and black undertones. Polished, it has a gleaming chatoyant quality. The hardness is 5 and the structure fibrous. Some chlorastrolites have been found on the Michigan upper peninsula, and doubtless many lie buried under Superior's icy water.

Datolite:

Although the zeolite, datolite, in crystal form is not uncommon, only Michigan's famous copper country has the compact massive form which is sought as a gem.

The Zeitners, who are inveterate mineral collectors, are caught looking over some of their good "finds" while on one of their numerous collecting trips. Their headquarters are at Mission, South Dakota, where they have a beautiful display in the Zeitner Museum.

The soft variegated colors and red copper inclusions together with the porcelain like texture and luster make datolite a lapidary favorite. Often with dendritic patterns the colors range on the spectrum from the greys and greens to the reds and yellows. Bright canary yellow, rare in any gem, is perhaps the most unusual color. Datolite too has a hardness of 5.

Fairburn Agates:

The rare and expensive fairburn agates of South Dakota and Nebraska are a variety of unusually colorful fortification agates. Their intricate holly-like patterns and wide definite banding make them real collectors' items. Named for the town of Fairburn between the Badlands and the Black Hills, the agates are found in alluvial rock beds stretching for many miles. The agate beds begin northeast of Fairburn and lie from that area toward the southwestern corner of the state.

There are so many cutting materials in the Fairburn beds that unfortunately many tourists confuse the banded jaspers or "prairie agates" with the real fairburn. Sometimes even advanced rockhounds and dealers from distant localities do not seem to know what a real fairburn is. Here's how to know the true agate.

The "Fairburn" agate at left, is often mistaken for the "Tepee" agate (center). Mexican "Fortification Agate" at lower right.

1. A fairburn must have a definite holly-leaf type fortification pattern.

2. The band must be parallel and have color contrast.

3. The pattern is not a surface stain, but goes in and thru the agate.

4. The fracture cleavage and texture are like agate, not like limestone, or coarse jasper.

5. At least some part of a good fairburn is usually translucent.

Tepee Canyon Agate:

Some collectors insist that good tepee agate is equal or superior to fairburn. The point is debatable, but at least few agates can pass tepee for color. Greatly resembling the fairburns in pattern, and if anything brighter in color this agate occurs in limestone matrix in the steep and rugged canyon area west of Custer, S. Dakota. Bright yellow with purple and red bandings is one of the favored kinds of tepee. A rarer type has blue and violet fortifications. The patterns often run larger than the average fairburn but the bands themselves are finer. Tepee's big drawback is that it is so difficult and dangerous to collect. Blasting and bulldozing ruin the agates and hand work is only for the most determined.

Superior Agate:

Actually there are many types of superior agates. These agates are found in the gravels of the Lake Superior area and neighboring states. Minnesota, Wisconsin, Michigan, Iowa, Missouri, and S. Dakota all have superior agates carried down from the North by glacial action. Like the fairburns these agates are usually classed as fortification or banded agates, but also have occasional eye, layer, and sagenite patterns. On the average the agates are small. One the size of your fist is unusual. The colors are dark and rich tones of red, brown, grey, orange, rust, caramel, maroon. A fairburn usually has several distinct colors of the spectrum in one agate. A superior usually has just shades or tints of one hue in a single specimen. The usual superior has finer and more regular and even bands than the fairburn. More superiors are translucent than fairburns. An especially fine variety with rich red color is called the carnelian.

Blue Chalcedony:

A real blue in semiprecious stones is rare, so a recent discovery in South Dakota of true blue chalcedony in cutting quality is finding a ready market. Already cut by nature in even slabs from ½" to 1" thick, this material is remarkably free from fractures and easy to polish. There are really several tints with the best two being sapphire-blue and lilac-blue. Found in veins in the rugged badlands, the blue producing area is very limited. Other blue grey vein chalcedony common along some badlands roads in no way compares to the real blue.

Two minerals frequently mistaken for Fairburns by the novice are Banded Jasper (left) and Agatized Sweetwater Coral (right).

Binghamite:

Named for William Bingham of the Minnesota Mineral Society, this chatoyant quartz family gem resembles tiger eye. The fibrous inclusions in reds and golds make this a spectacular gem for cabochons. Binghamite is found in the iron country of northern Minnesota. A sub-variety is called silkstone. The fibers of silkstone are irregular and wavy, often flamelike in appearance. Like other fibrous gems binghamite need considerable skill in polishing.

Dendritic Opalite:

Kansas has produced some of the finest dendritic opalite in U.S. While much of it is opaque and runs from an off white to a buff, some is translucent, and rich in color and design. In the best the dendrites are almost blue black and form pleasing little scenes. The opalite is often fluorescent. About 5 in hardness the Kansas opal polishes easily.

Wisconsin Labradorite:

A chatoyant, metamorphic, feldspathic mineral, thought to be of Huronian age, found in the Rib Mountain area or north central Wisconsin. Somewhat inferior in quality to true labradorite, but nevertheless makes an attractive specimen when properly polished. Locally known as moonstone.

Ohio Flint:

The good material from Flint Ridge, Ohio, is not what we usually think of as flint. It is rather a kind of mottled jasp-agate with a wide range of fine colors and patterns. Some of the material is scenic, some dendritic, and some banded. One of the rare and beautiful colors is green. Although the material is massive, one must really work for the gemmy pieces. Collecting is not allowed in the park area but the material is also available on private land outside the park. The dividing line between chert, jasper, flint, and agate is often narrow. All flint is not suited for lapidary purposes, but neither is all agate.

Petoskey Stone:

Often called Petoskey agate this variety of calcified coral is named for the city of Petoskey, Michigan. An interesting novelty stone because of its geometric coral pattern, the stone comes in a variety of neutral hues. It is not easy to get a high luster on Petoskey stone, so some lapidaries have experimented with methods of polishing it using acid, similar to marble polishing methods.

The "Fairburn" beds also afford other good material, such as Jasper, Black Agate and Jasper Conglomerate.

Fresh Water Pearls:

Like Petoskey stones, pearls belong to the calcium minerals rather than the quartz group. Fresh water pearls from the valley of the Mississippi have been found in Iowa, Wisconsin, and many other midwestern states, but so many were found and marketed in Wisconsin that at one time they were referred to as Wisconsin pearls. Many of these irridescent gems from the fresh water mussel are of excellent quality. Pearls from the midwest are now rare and bring premium prices.

Gem Fossils:

No discussion of the unique gems of the Midwest would be complete without mention of the gem fossils of the area. Although there are many which fall in this category here are a few for which the Midwest is particularly famous.

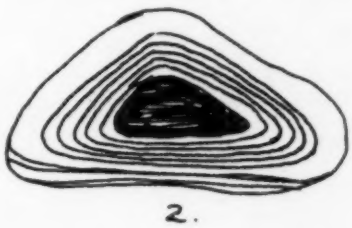
1. Cycad. Found in western South Dakota. This first type of flowering plant is often well preserved by silica and when cut the bold diamond pattern makes it a gem of unusual beauty.

2. Lepidodendron. In the strip coal mines of Iowa a rare fossil fern called Lepidodendron occurs. When silicified this fossil cuts and polishes well. The pattern is not unlike cycad. Inclusions of marcasite make some pieces unusual.

3. Osmundites. A new discovery from North Dakota, the gem quality osmundites are also a type of fern fossil. The details of preservation in the North Dakota find are remarkable. Well opalized, fan shaped, osmundites take a lustrous polish.

4. Iowa Coral. Gem coral is sometimes found in southeastern Iowa. Replaced by quartz rather than calcite, the pattern resembles Michigan's Petoskey stone. The color is sometimes pink or red and when solid this is a high quality cutting material. Lithrostrotion Canadensis is the name assigned to it by the paleontologists.

5. Dendritic Ivory. In sand and gravel pits along the South Dakota-Nebraska border collectors have for years been finding well opalized pieces of ivory from mammoth or mastodon. The ivory is dendritic and varies in color from blue-grey to green, from ivory white, to salmon. Hard on the diamond saw, the ivory is satiny when polished.



1. Fairburn 2. Superior 3. Thomsonite 4. Cycad

Every locality has its own collectors' prize, highly honored by local rockhounds, and many of them deserve a place among the gems of the Midwest. However, I have tried to describe a few which have achieved nation-wide notice, thus helping the Midwest to find a high place among the gem regions of the country.

MIDWEST FINDS IN '59

Every season brings new fields to the attention of collectors. As usual the midwest has its share. The following listings are by no means complete, but they represent some of the most interesting items of the 1959 field trip season.

First, SOUTH DAKOTA—because this is my native happy hunting ground. We have finally confirmed rumors of emerald beryl in the Black Hills. The emeralds, fine as actinolite, occur in a schist matrix in a pegmatite outcrop near Iron Mountain. No digging or blasting has been done so little is known about the potential of the deposit.

In the high limestone area of the hills a thick vein chalcedony was found with brilliant scattered patterns of fortified agate, resembling tepee canyon agate, apparently inlaid at random. The background is a clear white chalcedony and has a greenish fluorescence.

In the badlands a field of excellent quality vein chalcedony was discovered. The most unusual is bicolored with one type having a layer of true blue between two layers of coral pink, and another type having the reverse colors. It fluoresces green, takes a good polish and should be ideal for cameos and other unusual jewelry.

Clear colorless barite crystals were found in Pierre shale concretions in southwestern South Dakota. The crystals are sparkling and beautifully formed but are smaller than our famous golden barite. They fluoresce a fuchsia color.

NEBRASKA—our neighbor to the south is the locale for some fine nodules of dendritic chalcedony. Found north of Chadron these nodules resemble the fossil coral replaced by chalcedony, often referred to as "petrified sponge," from west central South Dakota.

Scientifically one of the most important finds is the discovery in NORTH DAKOTA of perfectly preserved osmundites. Highly agatized and detailed, this ancient fern-like plant in a fossil form is not unlike cycad. These graceful fan shaped fossils are rare anywhere but as far as I know the North Dakota examples are the finest found.

Two outstanding items are from IOWA. The first is the unusual cone-in-cone calcite from near Stanhope. Most cone-in-cone calcite is undistinguished dirty grey, including that found in South Dakota, however, Iowa's is a spectacular jet black. It is by far the best cone-in-cone I have ever seen. (We now have two nice pieces, courtesy of Wayne and Winifred Jones and the Allies.)

The other IOWA find is smokey quartz crystals with large needles of goethite from eastern Iowa. The crystals of unusual size occur in vugs of limestone. Both minerals have been found before in Iowa, but the size and perfection of these make them a remarkable find.

Near Wauzeka, WISCONSIN, some fine quartz crystals stained all the way through by hematite have been recovered. The most interesting thing about these crystal groups is that many of the orange toned crystals are doubly terminated.

From western INDIANA come some strange fossils. They are marine fossil casts, brachiopods, crinoids heads and other well defined fossil shapes.* However, the odd thing is that these fossils have been entirely replaced by quartz. They are also quite a bit larger than the normal marine fossils of the area. They occur as surface material and not in matrix.

*See "Indiana's Geodes Are Mysterious," by William H. Allaway in Feb. issue.

RECOMMENDED READINGS

"The Mesabi and its Minerals," by Richard Lake. November and December issues of *Mesabi Media.* Describes the many minerals found in the Biwabik iron-bearing formation of the Mesabi Range.

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"Coloring Turquoise," by Ralph Hagmeir. December and January issues of *Geologem.* Step by step directions are given for restoring color to turquoise or to give it the color that nature forgot to add.

* * * *

"How to Open Geodes," by Jerry Ostrom. January issue of *Pick and Dop Stick.* Bashing geodes with a hammer sometimes produces good results, but you will have more good specimens and fewer piles of rubble if you follow Mr. Ostrum's advice.

* * * *

"Calcite", by Harry Trudall. December issue of *Keystone Newsletter.* Lists famous calcite deposits throughout the world and relates how the science of crystallography had its beginning when Abbe Rene-Just Hauy accidentally shattered a friend's beautiful calcite crystal.

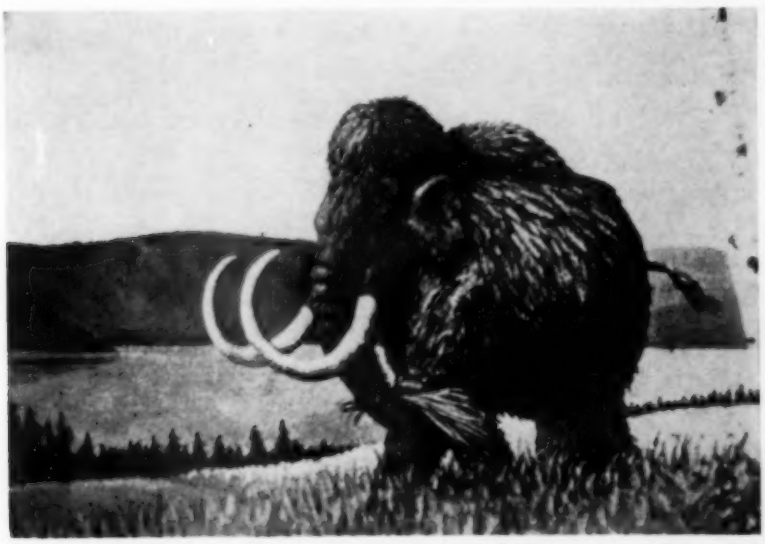
Elephants at Crystal Lake

by CLARENCE R. SMITH

NO, it was not an elephant which died on the hands of some circus passing through town. This elephant was not brought from Africa or India but he died in his natural habitat and in his own home. Fantastic, you say, this is Crystal Lake, Illinois, a region of farms and highways and men. But men were not always the chief inhabitants of Northern Illinois and there is plenty of evidence that a fairly common monarch of an earlier day, say 12,000 years ago, was the American Mastodon.

But coming back to the Crystal Lake part of our story, Joseph Anzinler, last December, found some gigantic bones and a tusk while excavating for a pond in a low area on the farm of Rudolph Fichen. Fichen rightly knew that here was something of more than passing interest and that it should be reported for the cause of science. Word concerning the discovery was sent to William H. Allaway, associate editor of "Earth Science" by Russell V. Halvorsen, and to the biology department of the local high school. Allaway in turn notified the present writer who soon made a visit to the site of the finds in company with Mr. Fichen. Later a visit was made to the Crystal Lake high school where two of the specimens had been taken. The high school has a well-conducted biology department in charge of Prof. Earle Curtiss and his colleagues, Arthur Baker and Leonard Scheel. They were much interested in the identification and care of the specimens which will become valuable educational exhibits.

The Fichen farm is located on East Hillside Road in the Northwest quarter



Woolly Mammoth striding across a Pleistocene landscape in northeastern North America. Original water color painting by William C. Dilger of Cornell University. Kodachrome transparency of this painting may be obtained from Ward's Natural Science Establishment, Inc., Rochester, New York. This picture of the Mammoth (restored) is not of the same species as the Mastodon referred to in the article, but is somewhat similar in appearance. The Mammoth also definitely lived contemporaneously with man during the late Ice Age in Europe, as is shown by excellent pictograph likenesses of same found in caves of Northern Spain and France. See article,—"Oldest Pictures in the World," in issue of EARTH SCIENCE of July-August, 1954.—EDITOR.

of Section 28, Nunda Township in McHenry County, which is about two miles northeast of Crystal Lake. The finds were made in a low area near a small stream and although it has been under cultivation, it has been wet much of the time. The stratigraphic section here includes about six inches of black soil then six inches of peat, under which is one foot of grayish yellow clay which in turn is underlaid by the glacial sand and gravel. The mastodon specimens were found just at the top of the clay and were covered only by the peat and soil. This accounts for the considerable deterioration due to the winter frost and the bacterial and chemical action of the soil.

The only specimens which were originally found were a nine-foot tusk and the lower thirty-two inches of a femur. A six-foot section of the tusk was in fair condition and this together with the femur is now in the high school. The remainder of the tusk was regarded as too much deteriorated for exhibition purposes but was carefully gathered up by the author for structural study. In July of this year the upper end of a femur was found at the same site by Mrs. James MacRae of Barrington. It was brought to Aurora by Mrs. MacRae and Mrs. Arthur Hrobsky for identification. Very likely it is part of the same femur which is in the high school.

The size and proportions of these specimens, together with the circumstances of location, lead to the almost certain conclusion that they represent the American Mastodon. It is well known that these gigantic beasts were at home in Northern Illinois in early post glacial times. Remains of eighteen individual mastodons have been found within twenty miles of Aurora where a major series of finds was made in 1934. Many other finds have been made in Illinois.

A number of these are of written record and there is hardly a museum or collection of curios in the state which does not have a mastodon or mammoth tooth. In data so far accumulated by this author, specimens found in gravel deposits have represented the mammoth and those found in peat deposits have been mastodons. If more extensive evidence should follow this pattern it would indicate that the mammoth was the earlier inhabitant, possibly being here very early in the retreat of the Wisconsin glaciation if not actually disturbed by the last stage of this glaciation. The Mastodon on the other hand, where positive identification could be made, has not been found in the gravel deposits but in the marl and peat beds of several thousands of years later date.

Readers of this magazine are invited to send us data of finds which have come to their knowledge, or even of specimens in various museums and private collections, in care of Aurora College, Aurora, Illinois. Accumulation of data will help to prove or disprove the above theory and in any event will add to our understanding of these wonderful mammals which seem to have held such a very prominent place among the animal inhabitants of our own locality at an earlier day. There were indeed "giants in those days".

Ed. Note: For further reading consult, "Man and Mastodon in Missouri" in the May-June, 1956 issue of Earth Science.

ILLINOIS EARTH SCIENCE FIELD TRIPS

These field trips are conducted by Dr. George Wilson of the State Geological Survey to acquaint you with the development of the landscape around you and the geological processes that have formed the rocks and hills and valleys.

Spring Calendar

No. 1—April 16th, 1960. Assemble at Salem Community High School, Marion County.

No. 2—May 7th, 1960. Assemble at Grafton High School, Jersey County.

No. 3—May 21st, 1960. Assemble at Woodstock High School, McHenry County.

For further information, contact Educational Extension Service of the Illinois State Geological Survey at Urbana, Ill.

Ancient Bee Hives of Acworth

by MRS. JULIAN WETHERBEE

IN many places throughout the world one may find evidences of pre-historic peoples frequently presenting unsolved riddles as to their origin and purpose.

The great Stonehenge structures of England, the petroglyphs of our own western States, and the more recent Rune Stone discovery in Minnesota are examples with which we are all more or less familiar.

Less publicized, perhaps, although of great local interest, in Acworth, New Hampshire, there is the mystery of the so called Bee Hives. Who built them or in what ancient day they were erected and for what purpose, has never been determined.

After the glaciers left New Hampshire, the granite rocks had been ground smooth, while in other places the eskers, moraines and the drumlins were left.

Here in Acworth, where the glacier left a somewhat rounded cap of granite, are found these ancient Bee Hives. In hollows in the granite, in the many years since the rock was ground off, dirt has accumulated and grass, bushes and even trees have grown up in these spots.

Was it before trees had grown up, after the age of the glaciers, that these stone shelters were erected? If so, the builders needing material, used loosened slabs of granite to build these crude shelters or so called Bee Hives.

Why were they called Bee Hives? No one seems to know how or when that name was given to them. They are not tall enough for a man to stand up erect in. Were they built for an Indian to crawl into out of a storm? If so, were they built by the early Abnaki Indian tribes, that came down into New Hampshire from the lower St. Lawrence on their raids?

Or were they built as traps, putting the bait inside so a bear or other animal would enter, while the early Indian waited, ready to shoot his arrow, to kill, in order to get food to survive.

These people whoever they were, must have been strong, as slabs of granite can not be lifted with ease. Or were the people who built these so called Bee Hives, a people who traveled or lived in this part of the country long before the Indians?

Typical "Acworth Bee Hive"—front view showing opening's small size and crude structure.

Rear view—little more than a tumbled mass of granitic rocks left by the glaciers.

Were these rocks built up as a shrine, or a place to store their supplies? Why are they called Bee Hives by the people! Evidently this name for these crude shelters has been used for a great many years. It is not known who first called them by this name.

Soil from the ground has been analyzed to see if they may have been used as shelters for sheep, because many of the early settlers raised sheep to provide them with wool for their clothing and food. The tests showed they had not been used by sheep.

One elderly lady said she "understood there had been a row of these rock Bee Hives across the State." Are these in some way connected with the Salem mystery? Were some earlier people roaming this country, tumbling huge rocks, as easy as a child can do with his building blocks?

Will this always be a mystery? Or will someone find the answer to the so-called Bee Hives of Acworth?

Should some future archeologist ever come up with a proven or acceptable answer to this riddle we shall always be grateful that this mystery has at last been solved.

OTHER SOCIETIES

NORFOLK GEM AND MINERAL ASSOCIATION, organized less than a year ago, now has over 60 members. It has heard talks on diamonds, opals and the Antarctica, and has viewed a film on "Antique to Modern Jewelry." It has made two field trips, the last one to Fort Union, Va. where the main find was rhodonite.

BALTIMORE GEM CUTTERS GUILD'S president emeritus, James W. Anderson, celebrated his 85th birthday on Jan. 7. Despite the fact that he was hindered by a stroke suffered four years ago and a heart attack which hospitalized him in 1959, Mr. Anderson still found time to cut and polish stones and make 1100 pieces of jewelry, including bracelets, rings, pendants and letter openers, which he distributed among crippled children in Maryland, with 400 pieces going to the children of the town of Sidney, Montana, where, 52 years ago, Mr. Anderson founded a church.

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GEMCRAFTERS OF MIAMI has made the first contribution ($100) to the American Federation's National Scholarship fund. The society states that it hopes that other societies and individual members will follow its lead. Checks should be made payable to the American Federation National Scholarship Fund and forwarded to H. R. Hughes, AFMS Treasurer, P.O. Box 1163, McAllen, Texas.

HEART OF AMERICA GEOLOGY CLUB was given a lesson on "The Art of Making Spheres," at its January meeting, by Francis Blake. Mr. Blake displayed his most interesting spheres, including one made from petrified wood in a natural oak color. The grain of the wood is clearly shown and the sphere has the appearance of a polished croquet ball.

TOPEKA GEM AND MINERAL SOCIETY at its January meeting was scheduled to hear Mrs. A. C. Carpenter of Ottawa, Kansas speak on "Gem Stones of the Bible."

COLORADO MINERAL SOCIETY on January 1 featured a three-part program consisting of a demonstration and discussion on black light by Ralph Ellis and James Hurlbut; a brief talk on "Topaz Cave," by Thomas Range and Patsy Cushman; and a film on "Gold and Gold Mining."

Midwest Club News

(*Continued from p.* 47)

INDIANA GEOLOGY AND GEM SOCIETY climaxed its 1959 field trip season with an overnight visit to the fluorite mine at Cave-In-Rock, Illinois. The rock piles, though considerably picked over, yielded fair to good specimens of fluorspar, calcite, barite, pyrite and marcasite. Some really nice pieces were acquired from the local townspeople. A guided tour of the mine was given to the IG&GS members by the mine geologist. Because of the importation in recent months of fluorite from Mexico, where it is cheaply produced, most of the mines in southern Illinois are now idle. Until they are again in operation, there will be increasingly slim pickings for rock hunters.

FLINT ROCK AND GEM CLUB'S members have been offered the following courses by Mott College: 1. Lapidary, 2. Advanced Lapidary, 3. Rocks, Minerals and Gems, 4. Geological History of Michigan, and 5. Rock and Mineral Identification. Three members of the club have purchased portable cement mixers for only $15 each and are using them, with excellent results, as tumblers.

WABASH VALLEY MINERAL AND GEM SOCIETY on Jan. 21 heard Nolan B. Augenbaugh, instructor of Geology at Purdue University, speak on "Antarctica." Mr. Augenbaugh spent 18 months in Antarctica with an IGY expedition. He illustrated his talk with slides and showed speciments of minerals that he collected in the Antarctica. During the International Geophysical Year some 500 scientists, from over 40 countries, made a worldwide study of the earth sciences.

MINNESOTA VALLEY GEM AND MINERAL CLUB will have a rock and mineral show on April 24 in the Mankato High School, Mankato, Minn. Hours are from 1 to 6 pm and admission is free. Exhibitors are invited. Reservation for space should be made with Mr. Marion T. Carr, 108 Clover Lane, Mankato, Minn.

WISCONSIN GEOLOGICAL SOCIETY'S February meeting featured three colored films, "Chinese Jade Carving," "Braziliana Quartz," and "This is Aluminum."

INDEPENDENCE GEM AND MINERAL SOCIETY has made a generous contribution to a student loan fund in memory of its beloved member, J. N. Hanthorn, who died on Christmas Day at the age of 84. The fund has been named the J. N. Hanthorn Memorial Loan Fund.

CENTAL ILLINOIS ROCKHOUNDS on Feb. 7 heard Mr. and Mrs. Russell Kemp present an interesting program on "The Grotto of Redemption at West Bend, Iowa." Many pictures were shown of the Grotto which is one of the Rockhound Shrines in the Midwest. Russell Kemp is Director of Rockramas for the Midwest Federation and his wife Doris is noted for her beautiful lapidary work. She was an award winner at the American Federation convention in Portland last September.

On March 19-20 the society will hold its annual exhibit of gems, minerals, fossils and artifacts in the YMCA at Decatur, Ill.

A Midwest Federation Rockrama will be put on by the society on Sept. 23-25 at the Masonic Temple, West William Street, Decatur, Ill. Dealers, Midwest Federation Clubs and Members are asked to make their reservations a soon as possible. Write to George M. Davis, Box 201, Blue Mound Street for further information.

CENTAL MICHIGAN LAPIDARY SOCIETY held its annual banquet meeting on Jan. 21. Guest speaker was Clare Courter of the Michigan Mineralogical Society's Community Relations Committee. Mr. Courter showed slides and narrated the story of Michigan's many wonders, tourist attractions and physical features that nature has carved from the foundation rocks.

DES MOINES LAPIDARY SOCIETY held a Rock Bazaar on February 4. Profits from the sale of rocks will be used to help finance the American Federation and Midwest Federation Convention which the society will be host to in 1962. The Ames, Dallas Center, Marshalltown and Central Iowa clubs also participated in the bazaar.

MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY will be host to the annual meeting of the Tennessee Archaeological Society in October. This honor is rotated among the various chapters of TAS.

On Jan. 16 MAGS planned to visit the Eva site (150 miles from Memphis) to hunt for archaic stone artifacts. This is a waterline site and it is necessary to use boats to reach it.

CHICAGO LAPIDARY SOCIETY on Feb 4 viewed the Linde Company's new film, "The Gift of Kings," a colored motion picture on star sapphires and rubies. CLS member Clarence LaReau, who specializes in cutting and polishing star sapphires and rubies, displayed his most beautiful gems. The bragging pieces that Mr. LaReau carries in his pockets would dazzle a maharajah.

EARTH SCIENCE CLUB OF NORTHERN ILLINOIS was addressed by Miss Elaine Bluhm on Jan. 8. Miss Bluhm, who is secretary of the Illinois Archaeology Survey, gave the history of Indian culture in Illinois as revealed by numerous archaeological discoveries. The first informaation was gathered in the late 1880's by naturalists rather than archaeologists and their report was published by the Smithsonian Institute. Until 1922 little else was done in Illinois, then Warren K. Moorhead of the University of Illinois did research work at the Cahokia mounds and in 1937 wrote "Rediscovering Illinois." During the 1930's some archaeological studies were made by the WPA in southern Illinois. In 1949 Dr. John C. McGregor from the University of Illinois began a survey of archaelogical sites which is still in operation.

Miss Bluhm used slides to illustrate the cultural characteristics of the various Indian groups known to have existed in Illinois. She listed seven cultural periods from about 14,000 B.C. to 1810 A.D. These were the Paleo-Indian, Archaic, Early Woodland, Middle Woodland, Late Woodland, Mississippian and Historic.

MICHIGAN MINERALOGICAL SOCIETY enjoyed an interesting lecture in the field of anthropology at its December meeting when Dr. Stephen Cappanari, Associate Professor of Sociology and Anthropology at Wayne University, was its guest speaker. He chose as his topic "Anthropology in the Pleistocene—Man and Culture." Dr. Cappanari outlined man's development from Australopithecus into homo sapiens during the Pleistocene, and told of the revolution in man's cultural development through his domestication of plants and animals. The two exhibits Dr. Cappanari brought with him, a crude tool from the early Paleolithic and a skull from Hiroshima, graphically illustrated how far we have come and how quickly we can pass.

CENTRAL IOWA MINERAL SOCIETY'S President, Emmet DeVries, planned to celebrate his birthday in March in an unusual way. Mr. DeVries asked readers of the society's bulletin, "News Nuggets," to send him their designs for a pendant or necklace. As many as six stones of any shape or size could be included in the design. He stated that a committee of three would select the most beautiful, unusual and practical design and he would make it up in silver and the stones of the designer's choice and give the winner the necklace or pendant. Mr. De Vries said that in past years so many members of CIMS sent him cards and gifts that this year he wished to show his appreciation by giving a gift instead of receiving it.

TRI-COUNTY ROCKS AND MINERALS SOCIETY was recently incorporated in the state of Michigan. Its November news letter contains an excellent article on incorporation. Unincorporated societies should consider the following excerpts from the article: "A society is liable for the torts or wrongs of its agents or servants and in the case of an unincorporated society, the liability is fixed on the individual members . . . By incorporation, there is created an artificial being, invisible, intangible and existing only in the contemplation of law. Creditors must look to this artificial creature for payment and the members, as individuals of such a society, are protected by the shield of corporation and immune from attachment for debts or damage liability of the corporation."

MADISON GEOLOGICAL SOCIETY and the MADISON LAPIDARY AND MINERAL SOCIETY have been invited to join the University of Wisconsin's study-travel program on "Gem Stone Prospecting in the Rocky Mountains." There will be a pre-study of this tour from June 11 to July 16, actual travel time of the tour will be July 18 to August 14, and a post-travel workshop will be held after the trip. The director of the tour will be Professor Arthur Vierthaler of the University of Wisconsin's Department of Art Education and leader of the Madison Lapidary and Mineral Society. Brochures on this project are available from Robert Schacht, Assistant Director, Informal Instructional Services, 303 Extension Building, University of Wisconsin, Madison 6, Wis.

MADISON VALLEY MINERAL AND GEM CLUB is initiating a new feature in its bulletin, "Chip and Lick." Each month a question from a member will be published in the bulletin and the next month the consolidated answers and comments from fellow rockhounds will be printed. January's question was: "How can I build my own black-light?"

GRAND RAPIDS MINERAL SOCIETY will hold an exhibit on April 10 to 22 in the main hall of the Grand Rapids Museum. All phases of the earth science and lapidary hobby will be represented in the exhibit. The society is presently making plans to sponsor a course in Rock and Mineral Identification which will be taught by Dr. Richard Rose.

MINERALOGICAL SOCIETY OF PENNSYLVANIA visited the Wagner Free Institute of Science in Philadelphia on Dec. 13 to tour the museum and to hear an engrossing talk by Professor Erling Dorf of Princeton on "Paricutin—The Volcano that Grew in a Cornfield."

BOOK REVIEWS

EARTH SCIENCE—THE WORLD WE LIVE IN. Second Edition. Samuel N. Namowitz, Principal of Elijah D. Clark Junior High School, New York City, and Donald B. Stone, Mount Pleasant High School, Schenectady, N. Y. D. Van Nostrand Company, Inc. 1960. 614 pp. $5.20.

Earth Science is conceived by the authors as the story of the world around us, encompassing the changing surface of the earth, the oceans and their shores, the atmosphere and its weather, and the heavenly phenomena in the universe.

The book is designed as a High School text. At the end of each chapter are a series of Topic Questions and a list of suggested Student Activities. This edition retains the basic approach and familiar style of the first edition published in 1953, but has incorporated results of some of the recent research in the field, including that of the International Geophysical Year.

The authors have expanded their chapter "Rocks and Rockmaking Minerals" and added one entitled "Minerals of Economic Importance." An attractive 8-page, 4-color insert illustrates over 180 minerals. An appendix lists the major physical properties of these and other minerals. A 600-word glossary is also of value.

The chapter "The Sun and Its Family" now includes an outline of the principles involved in launching artificial satellites and putting them in orbit, as well as some of the problems contemplated in man's space travel.

This excellent introductory text will stimulate many students to engage in further study. The authors have rendered a noteworthy service to education at the secondary school level.

THE SEA OFF SOUTHERN CALIFORNIA. K. O. Emery, Professor of Marine Geology at the University of Southern California. John Wiley & Sons, Inc. 1960. 366 pp. $12.50.

The author has coordinated in one volume much of the data on Southern California's waters published by various scientists in some 2500 articles, along with many personal communications. He was uniquely qualified for the task by 25 years of research in California sediments and water, supplemented with field studies in other parts of the world. Although off-shore drilling for petroleum gives economic importance to such data, the book's primary aim is to integrate basic knowledge rather than serve as a guide to prospective oil drillers.

Dr. Emery believes that solution to the riddle of how petroleum forms may be approached through study of the composition of organic matter in the successive layers of sediment on the ocean floor. There is evidence indicating a progressive increase in the relative contents of carbon and hydrogen and decrease in oxygen and nitrogen. This compares with the progressive relative decrease in hydrogen as well as in oxygen and nitrogen in the conversion of wood to anthracite.

The book is enriched with 248 illustrations among which are striking under-water photographs taken on the bottom of the California basins. This is a scholarly work, amply annotated. Its scope ranges from structural history of the region to the current problems posed by the disposal of radioactive, sanitary, and industrial wastes in the waters off California.

HYDROLOGY. Second Edition. Chester O. Wisler and Ernest F. Brater. John Wiley & Sons, Inc. 1959. 408 pp. $9.25.

The authors are, respectively, Professor Emeritus and Professor of Hydraulic Engineering at the University of Michigan. The first edition of this work was used as a college textbook for 10 years. In addition to revisions made possible by the advance of knowledge and techniques in this field, two new chapters, "Semi-Arid Regions" and "Snow" are included in the second edition.

The behavior of water has been studied scientifically only since about 1930. The concept of the unit hydrograph has been a milestone in this study. By use of this important tool the volume of residual runoff corresponding to rates of runoff can be determined. The authors consider the introduction of a new procedure for applying the unit hydrograph principle to determine the maximum flow that may be anticipated on any given stream with any stated frequency one of the most important features of their presentation. The limitations of the older probability methods are pointed out.

An excellent chapter on Ground Water, contributed by John G. Ferris of the U.S. Geological Survey, is carried forward from the first edition. Considerable space is given to description of methods for recharging our ground water reservoirs.

The book condenses a world of information on water properties and behavior within its pages. There are still large gaps in our knowledge, however, and the writers stress the need for a continuous record of observations of flow and other phenomena on key streams.

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STRATIGRAPHIC PRINCIPLES AND PRACTICE. J. Marvin Weller, Professor of Invertebrate Paleontology, University of Chicago. Harper & Brothers, Geoscience Series, 1960. 725 pp. $10.

The author's purpose in writing this book was to present stratigraphy as an independent science, instead of in the role it normally assumes, that of handmaid to petrology or paleontology. In the opinion of this reviewer, he has succeeded beyond doubt. Dr. Weller is the son of a famous stratigrapher and paleontologist, Stuart Weller. Over 40 years of experience in the field have supplemented his formal studies. His observations and conclusions are those of an expert.

The book is divided into 4 parts: (1) development of stratigraphic thought and analysis and the relation of stratigraphy and time, (2) classification and composition of sediments and rocks, physiography, tectonic activity, (3) interpretation of stratigraphic bodies, and (4) appendix devoted to geological mapping and other field work. As the outline suggests, the book is long and comprehensive in scope. Nearly 300 drawings illustrate the text. The writing is direct and factual. No geologist, stratigrapher, or paleontologist will voluntarily lay the book aside after even a cursory skimming.

In the chapter "Correlation" Dr. Weller warns us of the present inadequacies of paleontologic knowledge. Even fossils from many of the well-known and easily accessible geologic formations in the United States have not been carefully collected and studied. The value of fossils as indices of geologic period is, of course, no greater than the state of our knowledge about them, particularly the evolution of the species. Based on identification of ammonites with the Jurassic System of England and nearby Continental Europe, of graptolites with the Ordovician in Great Britain and Sweden, and of trilobites with the Cambrian in North America, fossils do not seem to provide the means of correlation within an accuracy of much less than about 3 million years.

MINERAL EQUILIBRIA AT LOW TEMPERATURE AND PRESSURE. Robert M. Garrels, Professor of Geology, Harvard University. Harper & Brothers, Geoscience Series. 1960. 254 pp. $6.

This is a pioneering book in the relatively new science of geochemistry, the study of all parts of geology that involve chemical changes. The book's subject matter is the chemical relations of minerals in aqueous solutions at low temperatures and pressures. The author points out that whereas numerous texts are available on igneous and metamorphic geology, i.e. study

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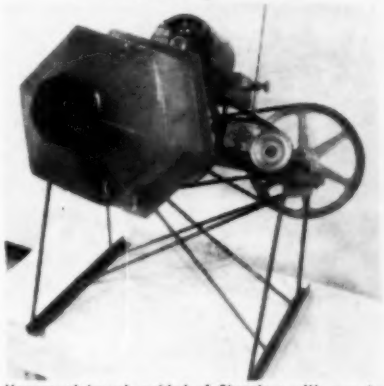

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of changes at high temperatures and pressures, the field of low temperatures and pressures has been singularly neglected, although these conditions prevail in the outer half mile of the earth, the region of direct observation. Representation of equilibrium relations among chemical compounds simulating minerals is also emphasized.

Professor Garrels chooses to use individual equations, rather than rectilinear graphs or triangular composition diagrams to portray equilibrium relations among minerals. Geological applications of the Eh-pH diagrams range through ore-deposition problems, formation of soils, and oxidation-reduction qualities of ground water.

The author has helpfully inserted a preliminary section in which he defines the terms and symbols employed in the equations.

SUBSURFACE MAPPING. Margaret S. Bishop, Associate Professor of Geology, University of Houston. John Wiley & Sons, Inc. 1960. 198 pp. $5.75.

This book presents the new concepts in geologic mapping that have been developed since Dake and Brown published their book "Interpretation of Geologic and Topographic Maps" in 1924. It is the first suitable textbook designed for the preparation and interpretation of the great variety of subsurface maps now in use.

New maps devised since 1924 which are explained in this book comprise the following: (a) Isopach—shows by means of contour lines the distribution and thickness of a chosen mapping unit, (b) Facies—shows the distribution of different types of sedimentary facies occurring within a designated geologic unit, (c) Paleogeographic—deals with the geography of an area at some specified time in the past, (d) Paleogeologic—made of geologic conditions and events in some former period of geologic time, (e) Paleotectonic—intended primarily to represent the deformation of parts of the earth's crust during a time interval, and (f) Palinspastic—shows restoration of folded and faulted rocks to original relative geographic positions.

PHYSICS AND CHEMISTRY OF THE EARTH. Vol. 3. L. H. Ahrens of Capetown University, Frank Press of California Institute of Technology, and Kalervo Rankama of the University of Helsinki, and S. K. Runcorn of King's College, editors. Pergamon Press. 1959. 164 pp. $15.

This latest of an annual series is written to supply a need for critical survey reviews in the fields of geochemistry and geophysics. Titles of the eight chapters indicate the variety of subject matter touched upon: Palaeoclimates,

Geophysical Investigations in the Eastern Caribbean, Continental Margins and Geosynclines (east coast of North America), Origin of the Elements, Silicate Melt Systems, Geochemistry of Thorium and Uranium, Geochemistry in the U.S.S.R., and Electrical Properties of the Earth's Interior. Each chapter is followed by a list of references.

As the frontiers of scientific knowledge widen, keeping abreast of the advances is a Herculean task. This is well illustrated in the chapter "Geochemistry in the U.S.S.R." in which S. I. Tomkeieff makes reference to 1200 titles, published 1954-56, compared with 700 titles published 1948-53.

The chapter "Palaeoclimates" calls attention to significant research by Arrhenius indicating nine warm and cold stages instead of the four or five intervals usually accepted for the Pleistocene period. The present restriction of tropical climates to a relatively narrow belt is unusual. Most of the time prior to the Pliocene the bounday was between 50° and 60°.

ANNOUNCEMENT

SAVE, SAVE, Save Money!

EFFECTIVE June 1st, 1960, the annual subscription rate of Earth Science will be advanced to $2.50 per year. We are compelled to do this for two good reasons. First, we desire to give you more coverage in a larger magazine, and to do this we have added 8 pages (20%) commencing with the February 1960 issue. This will make possible the addition of a new ultra-modern Art Lapidary section for which we have had fine acceptance. Second, while our printing costs have more than doubled during the past ten years, this is the first advance we have made in our subscription rate. We are one of the last of the hobby magazines to do this, and we have been asked many times, why have you not raised your rates?

So that it cannot be said that we have taken undue advantage, we are making this announcement at this early date, becoming effective June 1st, so that you can make a big savings by sending in a 3-year subscription now for $5.00, and thereby saving $1.00 by so doing. One-year subscriptions at the old rate will also be accepted. DO IT NOW!

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NEW CLUB IN MICHIGAN

INTERESTED persons in the Ann Arbor-Ypsilanti, Michigan area have recently formed the Huron Valley Lapidary Guild. All present members have been students of Stephen Chick, lapidary instructor in the Ann Arbor Adult Education Program. Organizational meetings were held in the spring and summer prior to formal club activities in the fall of 1959.

The purpose of the club is the improvement of lapidary skills in the art of cutting and polishing cabochon gem materials and the sharing of interests and information related to these skills. The club particularly stresses active participation in lapidary work by requiring each member to exhibit yearly several samples of his workmanship which are to be chosen from the various rock and mineral families. The club is primarily designed for those who have already acquired the basic lapidary skills and who desire to perfect their craftmanship.

The main program activity of the club is the presentation of stones polished by club members. Each month a particular stone is assigned, reported on, discussed and pieces purchased at the meeting. The following month the polished stones are exhibited and discussed again.

For further information on the Huron Valley Lapidary Club contact the president, Mr. Herbert Cornish, 123 College Place, Ypsilanti, Michigan. (Jane Foulser, reporter)

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WE are indeed fortunate to be able to announce that beginning with our June issue a continuing series of articles will start on "THE ART OF FASHIONING GEM STONES" by our own J. Daniel Willems, an expert in his own right, upon this very fascinating subject. You will not wish to miss a single one of these fine articles.

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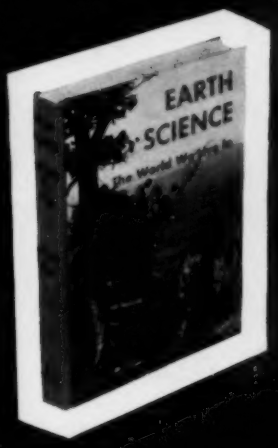

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*See Article "Rockrama's"—August '59 Issue Pg. 130.